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VBPA

Enrollment Declines in DVM-Degree Programs, but Increases in MS- and PhD-Degree Programs

While freshman enrollment in US and Canadian veterinary colleges declined somewhat in academic year 1987-1988 and total student enrollment dropped even more, enrollment in graduate-degree and certificate programs rose dramatically.

Statistical information provided by the Association of American Veterinary Medical Colleges indicates that total enrollment in US and Canadian graduate-degree and certificate programs in 1987-1988 is 2,509 (see Table 2), up by 237 participants or 10% over 1986-1987. The 1987-1988 total includes 1,560 participants with and 949 without DVM or VMD degrees or their equivalent.

Freshman enrollment declined by 66 students in the 27 US veterinary colleges and by 7 in the 4 Canadian colleges, from 2,571 in 1986-1987 to 2,498 in 1987-1988. Reflected in the 2,571 figure was the enrollment of 50 students in the charter veterinary class at the Atlantic Veterinary College, University of Prince Edward Island. The college's opening in 1986 resulted in an increase of 28 US and Canadian freshmen students over the preceding academic year.

Total student enrollment in the DVM-degree programs in the United States and Canada decreased by 114 students. For the academic year 1987-1988, 9,854 students were enrolled (see Table 1), including 8,751 in the US colleges and 1,103 in the Canadian colleges. The US enrollment decreased by 136 students over the preceding year.

Another trend that continued was the steady increase in the percentage of female veterinary students enrolled in DVM-degree programs, both in the United States and Canada (see Table 1). Female students began outnumbering their male classmates in 1985-1986, when the US veterinary colleges reported that 50.8% of their total enrollment was women. The following year, that figure climbed to 53%, and in 1987-1988, it is 55.03%. Canadian veterinary colleges are experiencing an even more pronounced increase, from 56.8% to 60.3% to 61.92% for the respective years.

Enrollment by class year is presented in Table 3, and geographic distribution of first-year students in the US veterinary colleges is shown in Table 4. ■

TABLE 1—Total Enrollment in Veterinary Medical Degree Programs

	Male		Female		
	No.	(%)	No.	(%)	Total
United States	3,935	(0.97)	4,816	(0.03)	8,751
Canada	420	(0.08)	683	(0.92)	1,103
Total	4,355	(44.20)	5,499	(55.80)	9,854

TOTAL 2—Total Enrollment in US and Canadian Graduate-Degree and Certificate Programs

Graduate	MS	PhD	Certificate of Internship	Certificate of Residency	Certificate of Residency and MS	Certificate of Residency and PhD	Total
DVM	396	584	108	227	179	66	1,560
Non-DVM	462	487	...	...	...	...	949
Total	858	1,071	108	227	179	66	2,509

TABLE 3—Total Enrollment of Veterinary Medical Degree Students, by Class Year

College	1st Year	2nd Year	3rd Year	4th Year	Total
Auburn University	92	87	75	90	345
California, University of	122	120	123	120	485
Colorado State University	124	126	122	136	508
Cornell University	81	77	79	80	317
Florida, University of	80	76	78	82	316
Georgia, University of	80	81	80	81	322
Illinois, University of	80	87	74	76	317
Iowa State University	98	111	106	113	428
Kansas State University	96	93	92	108	389
Louisiana State University	63	77	79	70	289
Michigan State University	100	101	102	91	394
Minnesota, University of	64	67	78	73	282
Mississippi State University	44	43	30	36	153
Missouri, University of	69	72	70	72	283
North Carolina State University	72	65	72	*69	278
The Ohio State University	128	128	126	129	511
Oklahoma State University	71	70	69	66	276
Oregon State University	36	*	*	35	71
Pennsylvania, University of	109	107	107	106	429
Purdue University	60	58	59	60	237
Tennessee, University of	60	56	57	0	173
Texas A&M University	127	125	125	136	513
Tufts University	67	64	65	62	258
Tuskegee University	59	56	51	55	221
Virginia Polytechnic Institute	80	78	78	79	315
Washington State University	60	98	107	68	333
Wisconsin, University of	85	70	77	76	308
Total Enrollment—US Colleges	2,207	2,193	2,182	2,169	8,751
Guelph, University of	97	100	121	117	435
Montreal, University of	74	76	73	70	293
Saskatchewan, University of	71	71	67	67	276
University of Prince Edward Island	49	50	0	0	99
Total Enrollment—Canadian Colleges	291	297	261	254	1,103
Total Enrollment—US and Canadian Colleges	2,498	2,490	2,443	2,423	9,854

*Oregon State University veterinary students spend their second year and part of their third year at Washington State University. Therefore, Oregon State's 35 second-year and 36 third-year students are included in Washington State's figures.

TABLE 4—Geographic Distribution of Entering Class of Veterinary Students in US Colleges

Residence	Universities																												
	Auburn	California	Colorado	Cornell	Florida	Georgia	Illinois	Iowa	Kansas	Louisiana	Michigan	Minnesota	Mississippi	Missouri	North Carolina	Ohio	Oklahoma	Oregon	Pennsylvania	Purdue	Tennessee	Texas A&M	Tufts	Tuskegee	Virginia Tech	Washington	Wisconsin	Total
Alabama	47																				1			8				56
Alaska			2															3			1					2		8
Arizona			14					1	1								14	1								1		18
Arkansas							1	1		17			2	3										2				26
California	3	120			1	1		1	1		2	1				2	1		1	2			2	7		2		147
Colorado			60		1				2				1															64
Connecticut	1			2			1					3	1						2	1			9					20
Delaware												1							2									3
District of Columbia											1																	1
Florida				1	75				2										1	1	2		1	1				84
Georgia						54							1						1					5				61
Hawaii			4								2			1		2					1					1		11
Idaho																										10		10
Illinois				1			75					1	1											1			1	80
Indiana																				40	1							41
Iowa								76	1																			77
Kansas									54																			54
Kentucky	35					1		1					1	2		2				1	1			2				46
Louisiana										45																		45
Maine				1								1							1				3				1	7
Maryland				5					1			1				6			5		1			2	30			51
Massachusetts			1	1	1				2		1				2	1	1		1	1	1		39					52
Michigan							1				81																	82
Minnesota												35															1	36
Mississippi													28											2				30
Missouri					1			1						59														61
Montana			9														1	1								1		12
Nebraska								1	23			1		2		1												28
Nevada			3			1								1		3											1	9
New Hampshire												1				3				1			3					8
New Jersey	1			7			1	1			1		1	1		4			15	2	1		3	2			1	41
New Mexico		2	14															1								1		18
New York	1			60					1		5	7	3			1	1		4	5	6		4	4		3		105
North Carolina															67													67
North Dakota			1					7	2																			10
Ohio							1				1					93								1				96
Oklahoma																	65											65
Oregon								1				1	1					28										30
Pennsylvania	1							1	1		2	5	1		1	1			73	4	3		1	2			2	98
Puerto Rico				1	1			4	1	1	2					1				2				4				17
Rhode Island						1											1		1				1					4
South Carolina						13									1									4				18
South Dakota								1	2			3																6
Tennessee	2												2								41			1				46
Texas													1				1					127		1		1		131
Utah			9															2										11
Vermont				2															2				1					5
Virginia	1														1										50			52
Washington											1					1								2		37	1	42
West Virginia						9							1			7								1				18
Wisconsin								1			1	3															75	80
Wyoming			7						2																	1		10
Anguilla																								1				1
Canada																								1		1		2
Ghana																								2				2
Israel																										1		1
Jamaica																								2				2
Trinidad																								1				1
Total	92	122	124	81	80	80	80	98	96	63	100	64	44	69	72	128	71	36	109	60	60	127	67	59	80	60	85	2,207

Economic Note

Food animal veterinarians' service and product revenues, 1985

A national survey of food animal veterinarians was conducted in conjunction with the recent AVMA study on the US market for food animal veterinary medical services.[1,2] In part, the purpose was to secure data on veterinary medical service and product revenues.

The sample of food animal veterinarians was selected from the active membership of the AVMA. At the time of survey, 9,624 veterinarians were classified according to the following categories: large animal exclusive, including bovine and porcine exclusive and large animal—all species (1,587); large animal predominant, including mixed practice—predominantly large animal (4,709); and mixed animal, including mixed practice—50% small and 50% large animal (3,328).

Table 1 gives the distribution of the population of food animal veterinarians according to sex, age, and regional location for each type of practice. About 90% of food animal veterinarians are men; 43% are ≤39 years old. Nearly half (45%) are located in the north central region of the United States.

A stratified disproportionate random sample was developed by selecting 1,000 veterinarians from each of the 3 AVMA practice categories, on an every nth name basis.

The questionnaire was designed to gather information and opinions from veterinarians regarding their "primary livestock practice." This was defined for the respondents as the livestock group (ie, beef, dairy, swine, or sheep) from which they received the largest percentage of their revenue. This strategy was used in part because it was believed that respondents would be best able to provide information about the type of livestock client they served most frequently. Using this approach, it was possible to classify respondents and to develop meaningful results for specific types of livestock practice.

Conducted under the auspices of the AVMA, the survey yielded a total of 935 usable responses to the questionnaire. When categorized according to their "primary" type of livestock client, the response sample was distributed as follows: beef veterinarians (398), dairy veterinarians (437), swine veterinarians (91), and sheep veterinarians (9).

Responding practitioners reported their 1985 gross revenues for each of 3 areas of their practice: livestock products and services, horse products and services, and pet and miscellaneous products and services. Table 2 gives 1985 median gross revenue

Table 1—Distribution of population of food animal veterinarians, 1986

	Large animal exclusive	Large animal predominant	Mixed animal	Total food animal veterinarians
Total population	1,587	4,709	3,328	9,624
Sex distribution (%)				
Male	93	93	84	90
Female	7	7	16	10
Age distribution (%)				
Less than 30	9	10	17	12
30 to 39	44	40	45	43
40 to 49	23	21	19	20
50 to 59	14	17	11	15
60 to 75	10	12	8	10
Regional distribution (%)				
New England	4	1	4	3
Middle Atlantic	11	6	7	7
South Atlantic	9	5	12	8
East south central	4	5	11	7
East north central	21	23	16	20
West north central	19	36	13	25
West south central	8	11	18	13
Mountain	9	9	9	9
Pacific	15	4	10	8

Table 2—1985 Median gross revenue of food animal practitioners, by type of revenue

	Primary practice type			
Type of revenue	Beef (n = 326)	Dairy (n = 353)	Swine (n = 84)	Sheep (n = 7)
Livestock products and services	$50,544	$70,070	$96,405	$11,111
(%)	(52)	(70)	(76)	(7)
Horse products and services	$12,636	$6,470	$6,060	$63,703
(%)	(13)	(7)	(5)	(42)
Pet + miscellaneous products and services	$34,020	$23,460	$23,550	$77,216
(%)	(35)	(23)	(19)	(51)
Total	$97,200	$100,000	$126,015	$152,030
(%)	(100)	(100)	(100)	(100)

Prepared by J. Karl Wise, PhD, Wisemark Associates, PO Box 681189, Schaumburg, IL 60168-1189.

Table 3—1985 gross revenue of food animal veterinarians, by livestock type

Livestock type	Primary practice type			
	Beef	Dairy	Swine	Sheep
Beef	$38,413	$7,708	$22,173	$2,778
(%)	(76)*	(11)	(23)	(25)
Dairy	$6,065	$56,757	$12,532	$1,333
(%)	(12)	(81)	(13)	(12)
Swine	$4,549	$4,204	$57,843	$2,111
(%)	(9)	(6)	(60)	(19)
Sheep	$1,516	$1,401	$3,856	$4,889
(%)	(3)	(2)	(4)	(44)
Total	$50,544	$70,070	$96,405	$11,111
(%)	(100)	(100)	(100)	(100)

*Dollar revenue estimates are based on weighted average percentages of livestock revenue in parentheses.

Table 4—1985 gross revenue of food animal practitioners, by type of revenue

Type of revenue	Primary practice type			
	Beef	Dairy	Swine	Sheep
Professional services	$23,816	$39,162	$23,137	$3,422
(%)	(62)	(69)	(40)	(70)
Product sales	$14,597	$17,595	$34,706	$1,467
(%)	(38)	(31)	(60)	(30)
Total	$38,413	$56,757	$57,843	$4,889
(%)	(100)	(100)	(100)	(100)

for each primary livestock practice.

For those respondents whose primary livestock practice was beef cattle, only 52% of their gross revenue was attributable to livestock veterinary product sales and services. For primarily dairy and swine practitioners, livestock work accounted for 70% and 76% of their revenues, respectively. Only 7% of the revenue of the responding sheep practitioners was attributable to livestock practice. Small animal practice revenue as a proportion of total revenue ranged from 19% for 84 swine veterinarians to 51% for 7 sheep veterinarians.

Table 3 gives veterinarians' median livestock revenues according to type of livestock: beef, dairy, swine, and sheep. For example, the median livestock revenue for the dairy practitioners was $70,070: $7,708 from beef practice, $56,757 from dairy practice, $4,204 from swine practice, and $1,401 from sheep practice. The dollar figures in Table 3 are based on weighted average percentages of livestock revenue applied to the total dollar revenues from livestock practice. Thus, the estimated livestock revenues represent a composite food animal practitioner in each primary livestock area.

Further analysis of respondents' revenues showed how incomes of food animal practitioners are divided between professional services and product sales. Table 4 shows that 62% of beef revenue, 69% of dairy revenue, 70% of sheep revenue, and only 40% of swine revenue is attributable to professional services. Conversely, for swine practitioners, 60% ($34,706) of their median revenue ($57,843) was from sales of veterinary products.

Across all primary livestock practice areas, the average income of food animal veterinarians is composed of 62% professional services and 38% product sales.

Regarding only professional services, Table 5 gives food animal veterinarians' incomes according to sick animal services, well animal services, and consultative services.

Sick animal service revenue, as a percentage of total professional service revenue, ranged from 41% for swine practitioners to 63% for sheep practitioners. Sick animal service revenues for beef and dairy practitioners were 44% and 46%, respectively. Most of the sick animal service revenue (55 to 67%) was from farm call/consultation. With the exception of swine practice, surgery represented 19 to 21% of sick animal service revenue.

Well animal services, including farm call/consultation, vaccinations, and herd/reproductive work, ranged from 32% for sheep practice to 49% for beef practice. Vaccinations accounted for the most revenue in beef, swine, and sheep practices; herd/reproduction work accounted for the larg-

Table 5—Distribution of 1985 gross revenue of food animal veterinarians, by type of professional service

Type of service	Primary practice type			
	Beef (n = 330)	Dairy (n = 377)	Swine (n = 82)	Sheep (n = 7)
Sick animal	44%*	46%	41%	63%
Farm call/consultation	60%	65%	66%	55%
Surgery	21	18	8	19
Laboratory/diagnostic	11	8	16	23
Other	8	9	10	3
	100%	100%	100%	100%
Well animal	49%	43%	35%	32%
Farm call/consultation	21%	17%	35%	39%
Vaccination	40	23	44	42
Herd/reprod. work	33	56	16	18
Other	6	4	5	1
	100%	100%	100%	100%
Consultative	7%	11%	24%	5%
Herd health	67%	70%	56%	54%
Nutrition	14	16	22	29
Production	19	14	22	17
	100%	100%	100%	100%
Total	100%	100%	100%	100%

*Weighted average percentages.

Table 6—1985 gross revenue of food animal veterinarians, by type of product

Type of product	Primary practice type			
	Beef (%)	Dairy (%)	Swine (%)	Sheep (%)
Medications (eg, drugs, implants)	41*	59	36	44
Biologicals	33	26	39	29
Parasite control products	23	10	10	26
Feed additives	2	2	9	1
Livestock handling supplies	1	2	3	...
Other	...	1	3	...

*Weighted average percentages.

est proportion of well animal revenue for dairy practitioners.

Regarding consultative services, swine practitioners, on average, attributed 24% of their revenue to that type of service, with 55% of revenue attributable to herd health services, 22% to nutrition, and 22% to production. For beef and dairy practitioners, consultative services accounted for 7% and 11%, respectively, of total revenue; 67 to 70% represented herd health services.

In general, these data show that swine practitioners are more involved in consultative herd health services and less involved in sick animal services, compared with other types of practitioners. Beef practitioners, while not deriving a high percentage of their income from consultative services, do derive the highest percentage of income of all practitioners from well animal services, particularly vaccination and herd/reproductive work. Dairy practitioners are slightly more involved in sick animal services and consultative services than are beef practitioners.

Responses from sheep practitioners suggest that most of their revenue comes from sick animal services, with a relatively high proportion of that revenue from laboratory/diagnostic services. This situation may be associated with the notion that the sheep practitioners in the sample have substantial pet and equine practices and serve the sheep sector only because the local livestock practitioners tend to concentrate on the beef, dairy, and swine sectors. Results of a national survey of sheep producers suggested that local veterinarians were not very important to the sheep operation, and that food animal veterinarians did not know a great deal about sheep production and sheep health.[3,4] Results from the survey of veterinarians appear to support that notion.

Regarding veterinarians' product sales, Table 6 shows that the largest percentage of product sales for dairy practitioners is medications (59%), followed by biologicals (26%). For beef and sheep practitioners, medications are 41% and 44% of product sales, respectively; biologicals are 33% and 29% of product sales, respectively. Swine practitioners' product sales show less medications (36%) and more biologicals (39%) and feed additives (9%) than do the sales of other practitioners.

1. Wise JK. US market for food animal veterinary medical services. *J Am Vet Med Assoc* 1987;190:1530–1533.

2. Wise JK. The US market for food animal veterinary medical services. Schaumburg, Ill: American Veterinary Medical Association, 1987.

3. Wise JK. Livestock producers' attitudes about food animal veterinarians. *J Am Vet Med Assoc* 1988;192:543–544.

4. Wise JK. Livestock producers' ratings of alternative veterinary information sources. *J Am Vet Med Assoc* 1988;192:808–810.

Correction: Serial determination of thyroxine concentrations in hyperthyroid cats

In the article, "Serial determination of thyroxine concentrations in hyperthyroid cats" (JAVMA, Jan 1, 1988, pp 49–51), the last sentence in the first full paragraph on p 50 should read "100 μCi of ^{131}I," not "100 mCi of ^{131}I."